

Mending Torn or Damaged Sheets *by Werner Rebsamen*

The ANSI /NISO/ LBI Library Binding Standard, Z39.78-2000 contains many specific technical specifications. On page 3, item 6.4, the word “Repair” refers to mending torn or damaged sheets with a transparent pressure-sensitive alkaline paper mending tape. The description also includes a phrase “unless the customer and the binder make special arrangements for use of alternative mending materials or repair.”

Recently, a preservation librarian questioned this particular section and requested the following change - “*that all torn and damaged sheets are repaired with strips of Japanese tissue paper and paste.*” Questions from conscientious librarians present an opportunity for dialog and clarification. In response, it may be best if we first look at the history of torn sheet repair followed by a review of current technologies. This may help to better explain why the Standard is written as it is.

How we used to repair damaged sheets

Let us go back to 1950, when this writer started a career as a bookbinding apprentice in Switzerland where I received an excellent, government controlled trade education. One of the tasks was the repair and rebinding of old books and documents. At the time, neither oversewing nor double fanning was known to us. Virtually all books were sewn through the fold and, when a book was taken apart for rebinding, most of the outer folds were damaged and had to be repaired with strips of Japanese tissue paper. The first and last signatures (sections) received reinforcement on the back of the innermost folds so as to strengthen the relatively brittle, folded papers for the sewing process. I learned how to cook a starch paste

(part of a midterm test!) and spent considerable time repairing individual books – each wet strip had to be placed between board strips to initiate the drying process. Worse, the wet process distorted some of the sheets, especially if the paper grain direction was perpendicular to the binding edge. Needless to say, such painstaking, time consuming work would these days be cost prohibitive if done in a commercial library binding environment, except in the department for book restoration and conservation. During my first year as a bookbinding apprentice in 1950, cost for labor was no object. I was paid the equivalent of a \$1.25 or a mere 5 Swiss Francs for a 52-hour week! Although apprentices were paid virtually nothing, all received an excellent education.

Mending each damaged fold creates problems. Although Japanese tissue paper is relatively thin, it builds up. Take a book with 30 signatures or sections. If only the outer fold is repaired, there are 60 layers of Japanese paper placed on top of one another. Add the paste and a good swell, the technical expression of a spine which is much larger than the actual bulk of the text block, develops. This causes many down-stream problems in binding including shifting and distortion when trimming, rounding, or backing. Trimming such a text block square is nearly impossible, especially if the signatures or sections are thin.

In the mid-fifties, Mr. Ehlermann, a German bookbinding machinery engineer, visited the edition bindery at which I worked, the largest in Switzerland. He promoted the benefits of double fanning and, as a result, the bindery purchased one of his revolutionary machines. In our hand and library binding department, it was

quickly learned such a binding process eliminated all or most repair and reinforcing tasks. Due to these advantages, the double-fan process is now the foundation of commercial library binding. Without it, library binders would not be able to produce such cost-effective library bindings. Much earlier than the double-fan processes, oversewing provided the same advantages, but this binding process is, until these days, not known on the European continent.

Mending tasks on Commercial and Artifactual Items

As stated, despite double fanning and oversewing, library bindings often require torn sheets to be repaired. The “wet” process of using Japanese tissue papers is anything but cost-effective. Most libraries, except rare-book libraries and individual bibliophiles, would be willing to pay for such labor intensive tasks. This is why commercial library binders have carefully selected aging resistant transparent pressure-sensitive alkaline paper mending tapes.

Why be so fussy about the qualities of mending tapes? Binders and librarians are all too familiar with the old, yellowing cellophane tapes people used to “repair” torn sheets which quickly yellowed, detached and left stains most difficult to remove.

As stated in the ANSI /NISO/ LBI Library Binding Standard, Z39.78-2000, a customer can make special arrangements for use of alternative mending materials or repairs with their commercial library binder. Bear in mind, however, more than 95 percent of our work is on commodity items. Archival artifacts require and deserve special treatments.

Those responsible for writing the new standard did a remarkable job of

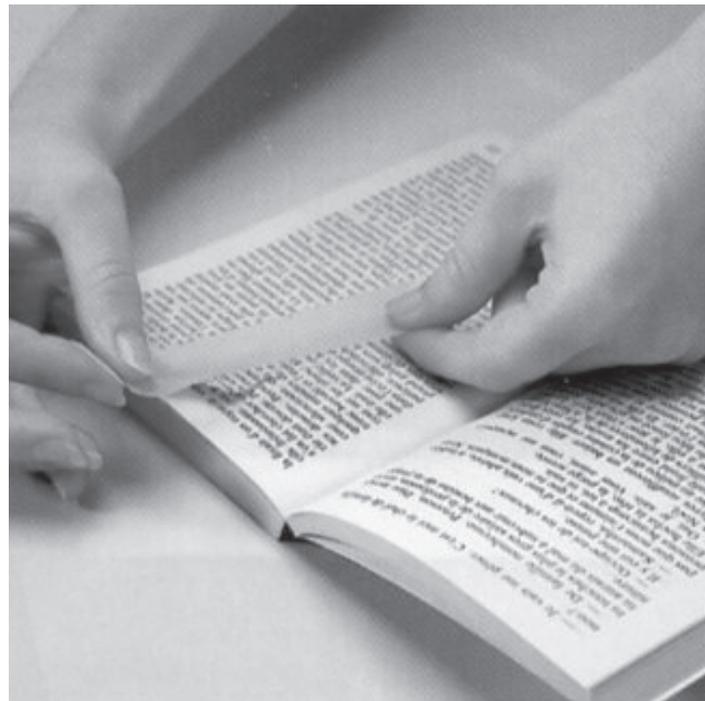
addressing this particular topic. The meaning of “artifactual value” can be found in the standard’s glossary. The best description in this regard may be found in the *Guide to the Library Binding Institute Standard for Library Binding* compiled by Jan Merrill-Oldham and Paul Parisi. In the section on repair, they refer to the mending materials specified and state the transparent pressure-sensitive alkaline paper mending tape is sometimes referred as “archival” mending tape. While it does not, in fact, meet the requirements for reversibility implied by the term “archival,” it has advantages over household-type tapes which have been used by library binders in the past. The new tapes are thinner and more flexible, resulting in a less stiff, more compatible mend, and best of all, they are easier to remove if necessary, because they have a paper (rather than plastic) carrier which can be penetrated by solvents. However, there are problems associated with “archival” mending tapes. Like household-type tapes, they occasionally cause inks to bleed and adhesive may creep out around the edges of the carrier. Superior alternatives include mending with heat-set tissue and with Japanese paper and starch paste. Such archival repairs are time-consuming to execute, however, and it is unrealistic to assume they can be made routinely by library binders. If truly archival-quality paper mending is desired for text blocks to be library bound, the mending should be done by trained personnel in the library before volumes are sent for binding. This is not to say binders are incapable of performing archival-quality paper repairs. Such mending is simply an expensive endeavor for a commercial service. Therefore, it is more cost-effective for a library to perform such tasks in-house, particularly where non-rare, non-special materials are involved. If such mending is done in-house, the binder must be instructed accordingly.

Proven Archival Tapes

Although there may be many mending products on the market, this bookbinding expert is most familiar with a product used by library binders and museums throughout the world. A German company offering a range of self-adhesive products, Neschen (www.neschen.com) has earned an excellent reputation. In addition, they market laminating machines and a sophisticated de-acidification process. Their brand name for mending tapes is Filmoplast. Repeated, independent aging tests earned their products excellent marks with archives worldwide. As discussed in the previous chapter, let us look at three of their major mending tapes:

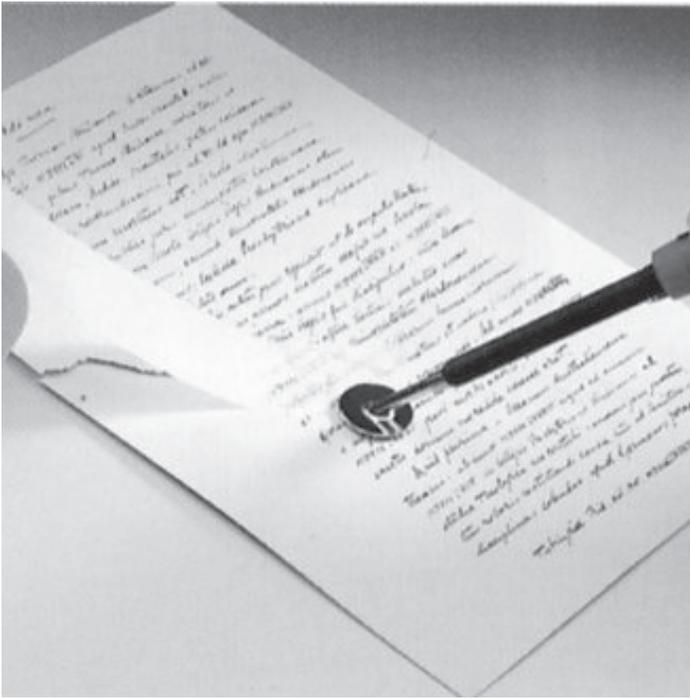
Filmoplast P – a self-adhesive, wood-free, ultra-thin and transparent special paper coated on one side with a solvent-free, age-resistant and permanently elastic acrylate adhesive. It has anti-aging properties as certified by the Foundation for Paper Technology. In a slightly alkaline range, it has no negative effects on documents. With a sufficient buffering-capacity, it also aids in the prevention of possible acid damages. Best of all, it is an environmentally friendly material and recycles via normal paper waste.

Filmoplast P90 is a new development with the same aging features as described. The difference, however, is it has long fibers which make it more tear resistant. In other words, if you



need to mend and reinforce papers, this particular tape is a better choice.

Filmoplast R is a lesser known product but it may be a better choice for mending true archival products. It is an ultra-thin, wood-free, transparent special paper which neither contains lignin nor hemi-cellulosis, but has a high percentage of alpha-cellulosis. These tapes are coated on one side with a heat-activated, plasticizer-free acrylate copolymer. In a German bookbinding journal, *Bindereport*, it was described as a so-called technical Japanese paper since it has similar aging characteristics as an original, handmade Japanese paper. The reason they called it “technical” is because paper is manufactured on a paper making machine. Despite the long fiber structure, it is very transparent and an ideal product to repair torn sheets on valuable documents. The Neschen Company offers appropriate heat-sealing tools also. Why heat-seal when there is pressure sensitive tape? From a bookbinder’s standpoint, repairing a large piece of newspaper or poster is an almost impossible task to execute with a long strip of a “sticky” pressure



publication, does not endorse any specific products. The items described in this article are used only as an example.

With regard to mending, what should a librarian do? First, determine if the item to be mended is archival. Then follow the advice given on page 7, item 5.3, in the *Guide to the Library Binding*

sensitive tape. It is much easier to do this by heat-sealing one little piece after the other. But there are other reasons for heat-sealing as previously stated in the *Guide on Library Binding*.

When asked what is best for the conservation of books and documents, David Neschen North America archival products manager, remarks “When talking about the difference between Filmoplast P and Filmoplast R, it has been my experience the conservation community favors type R because the adhesive is not as prone to migrating as the self-adhesive tapes. Once the heat is removed, the adhesive ‘sets’. The pressure sensitive tapes, because they do not dry out, remain in what we call an “active” state and there is a risk over time they will migrate further into the paper – making removal at a later date more difficult. In this case, we are talking about general mending and not “archival” preservation. This might be something of a moot point.”

Institute Standard for Library Binding. Even if a library has a repair department, all mending options should be discussed with your library binder. Most important, use only high quality mending tapes. Ask suppliers for copies of independent testing reports with regard to aging characteristics, pH value, adhesive strength, thickness, and temperature stability. Remember, good communications and quality materials are essential to the maintenance of a library’s precious collections.

Werner Rebsamen is Professor Emeritus at the Rochester Institute of Technology and the Technical Consultant to the Library Binding Institute. He can be reached at wtrebs@localnet.com.

Research reports are available on request from the Neschen Company. It should be stated, that LBI, for this